

WHAT IS CLAIMED IS:

1. A data protection processing device comprising:

a determination unit which reads continuous digital data in sequence and determines whether or not the read digital data forms numerical values having a predetermined continuous pattern; and

a calculation unit which adds predetermined calculation values to or subtracts predetermined calculation values from either all of or a portion of a predetermined number of items of digital data that are continuous after digital data that is determined as a result of the determination by the determination unit to form numerical values having the predetermined continuous pattern.

2. The data protection processing device according to claim 1, wherein the calculation unit sequentially adds or subtracts calculation values of predetermined data patterns or byte patterns to or from digital data or byte data that is the object of the addition or subtraction.

3. The data protection processing device according to claim 1, further comprising:

a memory which stores information relating to the predetermined numerical values or the predetermined byte

code, information relating to the predetermined number of items, and information relating to the predetermined calculation values; and

an information altering unit which alters at least  
5 one from among the information relating to the predetermined numerical values or the predetermined byte code, the information relating to the predetermined number of items, and the information relating to the predetermined calculation values that are stored in the memory.

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4. A data protection processing device comprising:

a holding unit which converts binary data input serially into byte data and temporarily holds the byte data;

a determination unit which sequentially reads the byte  
15 data from the holding unit and determines whether or not the read byte data forms a predetermined byte code;

a calculation unit which adds predetermined calculation values to or subtracts predetermined calculation values from either all of or a portion of a  
20 predetermined number of items of byte data that are continuous after byte data that is determined as a result of the determination by the determination unit to form the predetermined byte code; and

an output unit which converts byte data calculated  
25 by the calculation unit into binary data and serially outputs

the binary data.

5. The data protection processing device according to claim 4, wherein the calculation unit sequentially adds or subtracts calculation values of predetermined data patterns or byte patterns to or from digital data or byte data that is the object of the addition or subtraction.

6. The data protection processing device according to claim 4, further comprising:

a memory which stores information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values; and

an information altering unit which alters at least one from among the information relating to the predetermined numerical values or the predetermined byte code, the information relating to the predetermined number of items, and the information relating to the predetermined calculation values that are stored in the memory.

7. A data protection processing device comprising:

a first determination unit which sequentially reads transmission data or received data forming continuous

digital data and determines whether or not the read transmission data or received data contains digital data having a predetermined numerical value;

5 a first calculation unit which adds predetermined calculation values to or subtracts predetermined calculation values from either all of or a portion of a predetermined number of items of digital data that are continuous after the digital data having the predetermined numerical value when it is determined by the first  
10 determination unit that the transmission data or received data contains digital data having a predetermined numerical value;

a second determination unit which sequentially reads transmission data or received data forming continuous  
15 digital data and determines whether or not the read transmission data or received data contains digital data having a predetermined numerical value; and

a second calculation unit which subtracts the predetermined calculation values from or adds the  
20 predetermined calculation values to either all of or a portion of a predetermined number of items of digital data that are continuous after the digital data having the predetermined numerical value when it is determined by the second determination unit that the transmission data or  
25 received data contains digital data having a predetermined

numerical value.

8. The data protection processing device according to claim 7, wherein the first and second calculation units sequentially add or subtract calculation values of predetermined data patterns or byte patterns to or from digital data or byte data that is the object of the addition or subtraction.

10 9. The data protection processing device according to claim 7, further comprising:

a memory which stores information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values; and

an information altering unit which alters at least one from among the information relating to the predetermined numerical values or the predetermined byte code, the information relating to the predetermined number of items, and the information relating to the predetermined calculation values that are stored in the memory.

10. A modem device comprising:

a data compression unit which performs data

compression processing on digital data to be transmitted  
based on a normalized data compression standard;

a first determination unit which converts digital data  
that has undergone data compression processing by the data  
5 compression unit into byte data, sequentially reads the  
converted byte data, and determines whether or not the read  
byte data forms a predetermined byte code;

a first calculation unit which adds predetermined  
calculation values to or subtracts predetermined  
10 calculation values from either all of or a portion of a  
predetermined number of items of byte data that are  
continuous after byte data that is determined as a result  
of the determination by the first determination unit to form  
the predetermined byte code;

15 a first output unit which outputs the byte data added  
or subtracted in the first calculation unit;

a second determination unit which converts received  
digital data into byte data, sequentially reads the converted  
byte data, and determines whether or not the read byte data  
20 forms a predetermined byte code;

a second calculation unit which adds the predetermined  
calculation values to or subtracts the predetermined  
calculation values from either all of or a portion of a  
predetermined number of items of byte data that are  
25 continuous after byte data that is determined as a result

of the determination by the second determination unit to form the predetermined byte code; and

a data decompression unit which converts byte data subtracted or added in the second calculation unit into digital data and performs data decompression processing on the converted digital data based on the data decompression standard.

11. The modem device according to claim 10, wherein the first and second calculation units sequentially add or subtract calculation values of predetermined data patterns or byte patterns to or from digital data or byte data that is the object of the addition or subtraction.

12. The modem device according to claim 10, wherein the modem device further comprises:

a memory which stores information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values; and

an information altering unit which alters at least one from among the information relating to the predetermined numerical values or the predetermined byte code, the information relating to the predetermined number of items,

and the information relating to the predetermined calculation values that are stored in the memory.

13. A data communications system comprising:

5 a data transmitting device; and

a data receiving device which receives data transmitted by the data transmitting device,

wherein the data transmitting device includes

10 a first determination unit which reads transmission data in sequence and determines whether or not the read data includes digital data having a predetermined numerical value;

15 a first calculation unit which adds predetermined calculation values to or subtracts predetermined calculation values from either all of or a portion of a predetermined number of items of digital data that are continuous after the digital data having the predetermined numerical value when it is determined by the first determination unit that the data contains digital data  
20 having a predetermined numerical value; and

a transmitting unit which transmits data that has undergone calculation processing by the first calculation unit, and

wherein the data receiving device includes

25 a receiving unit which receives data transmitted



by the data transmitting unit;

a second determination unit which reads in sequence data received by the data receiving unit and determines whether or not the read data includes digital data having the predetermined numerical value; and

a second calculation unit which adds the predetermined calculation values to or subtracts the predetermined calculation values from either all of or a portion of the predetermined number of items of digital data that are continuous after the digital data having the predetermined numerical value when it is determined by the second determination unit that the data contains digital data having a predetermined numerical value.

14. The data communications system according to claim 13, wherein the data transmitting device and data receiving device are connected to each other via a network such as the Internet.

15. The data communications system according to claim 13, wherein the first and second calculation units sequentially add or subtract calculation values of predetermined data patterns or byte patterns to or from digital data or byte data that is the object of the addition or subtraction.

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16. The data communications system according to claim 13, wherein the data transmitting device and data receiving device further comprising:

5 a memory which stores information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values; and

10 an information altering unit which synchronizes the data transmitting device and data receiving device and alters at least one from among the information relating to the predetermined numerical values or the predetermined byte code, the information relating to the predetermined number of items, and the information relating to the predetermined calculation values that are stored in the memory.

17. A data protection processing method comprising:

a reading step of reading in sequence continuous digital data;

20 a determination processing step of determining whether or not digital data read in the reading step forms numerical values having a predetermined continuous pattern; and

a calculation processing step of adding predetermined calculation values to or subtracting predetermined calculation values from either all of or a portion of a

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18. The data protection processing method according claim  
17, wherein, in the calculation processing step, calculation  
values of predetermined data patterns or byte patterns are  
10 sequentially added to or subtracted from digital data or  
byte data that is the object of the addition or subtraction.

19. The data protection processing method according to claim 17, further comprising an information altering step of altering at least one of information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values.

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20. A data protection processing method comprising:  
a reading step of converting binary data input serially  
into byte data and reading the byte data in sequence;  
a determination processing step of determining whether  
25 or not the byte data read in the reading step forms a

predetermined byte code;

a calculation processing step of adding predetermined calculation values to or subtracting predetermined calculation values from either all of or a portion of a predetermined number of items of byte data that are continuous after byte data that is determined as a result of the determination in the determination processing step to form the predetermined byte code; and

an output step of converting byte data calculated in the calculation processing step into binary data and serially outputs the binary data.

21. The data protection processing method according claim 20, wherein, in the calculation processing step, calculation values of predetermined data patterns or byte patterns are sequentially added to or subtracted from digital data or byte data that is the object of the addition or subtraction.

22. The data protection processing method according to claim 20, further comprising an information altering step of altering at least one of information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values.

23. A data protection processing method comprising:

a holding step of converting binary data input serially into byte data and temporarily holding the converted byte data in respective predetermined data frames;

a data extraction processing step of extracting a portion of the byte data forming the predetermined data frames held in the holding step to serve as data for processing;

a determination processing step of sequentially reading from the data extraction processing step the byte data forming the data for processing and determining whether or not the read byte data forms a predetermined byte code;

a calculation processing step of adding predetermined calculation values to or subtracting predetermined calculation values from either all of or a portion of a predetermined number of items of byte data that are continuous after byte data that is determined as a result of the determination in the determination processing step to form the predetermined byte code;

a data frame reconstruction processing step of reconstructing the predetermined data frames using byte data calculated in the calculation processing step; and

an output step of converting the data frames reconstructed in the data frame reconstruction processing

step into binary data and serially outputting the binary data.

24. The data protection processing method according claim  
5 23, wherein, in the calculation processing step, calculation values of predetermined data patterns or byte patterns are sequentially added to or subtracted from digital data or byte data that is the object of the addition or subtraction.

10 25. The data protection processing method according to claim 23, further comprising an information altering step of altering at least one of information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of  
15 items, and information relating to the predetermined calculation values.

26. A data protection processing method comprising:  
a reading step of sequentially reading transmission  
20 data or received data forming continuous digital data;  
a first determination processing step of determining whether or not the transmission data or received data read in the reading step contains digital data having a predetermined numerical value;  
25 a first calculation processing step of adding

predetermined calculation values to or subtracting  
predetermined calculation values from either all of or a  
portion of a predetermined number of items of digital data  
that are continuous after the digital data having the  
5 predetermined numerical value when it is determined in the  
first determination processing step that the transmission  
data or received data contains digital data having a  
predetermined numerical value;

10 a second determination processing step of sequentially  
reading received data or transmission data forming  
continuous digital data and determining whether or not the  
read received data or transmission data contains digital  
data having a predetermined numerical value; and

15 a second calculation processing step of adding  
predetermined calculation values to or subtracting  
predetermined calculation values from either all of or a  
portion of a predetermined number of items of digital data  
that are continuous after the digital data having the  
predetermined numerical value when it is determined in the  
20 second determination processing step that the received data  
or transmission data contains digital data having a  
predetermined numerical value.

27. The data protection processing method according to  
25 claim 26, wherein, in the first and second calculation

processing steps, calculation values of predetermined data patterns or byte patterns are sequentially added to or subtracted from digital data or byte data that is the object of the addition or subtraction.

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28. The data protection processing method according to claim 26, further comprising an information altering step of altering at least one of information relating to the predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values.

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29. A data protection processing method comprising:

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a first reading step of converting transmission data or received data in the form of serially input binary data into byte data and sequentially reading the byte data;

a first determination processing step of determining whether or not the byte data read in the first reading step

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forms a predetermined byte code;

a first calculation processing step of adding predetermined calculation values to or subtracting predetermined calculation values from either all of or a portion of a predetermined number of items of byte data that are continuous after byte data that is determined as a result

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of the determination in the first determination processing step to form the predetermined byte code;

a first output step of converting byte data added or subtracted in the first calculation processing step into  
5 binary data and serially outputting the binary data as transmission data or received data;

a second reading step of converting received data or transmission data in the form of serially input binary data into byte data and sequentially reading the byte data;

10 a second determination processing step of determining whether or not the byte data read in the second reading step forms the predetermined byte code;

a second calculation processing step of adding the predetermined calculation values to or subtracting the  
15 predetermined calculation values from either all of or a portion of a predetermined number of items of byte data that are continuous after byte data that is determined as a result of the determination in the second determination processing step to form the predetermined byte code; and

20 a second output step of converting byte data added or subtracted in the second calculation processing step into binary data and serially outputting the binary data as received data or transmission data.

25 30. The data protection processing method according to

claim 29, wherein, in the first and second calculation processing steps, calculation values of predetermined data patterns or byte patterns are sequentially added to or subtracted from digital data or byte data that is the object  
5 of the addition or subtraction.

31. The data protection processing method according to claim 29, further comprising an information altering step of altering at least one of information relating to the  
10 predetermined numerical values or the predetermined byte code, information relating to the predetermined number of items, and information relating to the predetermined calculation values.

32. A data protection processing method comprising:  
a first holding step of converting transmission data or received data in the form of serially input binary data into byte data and temporarily holding the converted byte data in respective predetermined data frames;  
15 a first data extraction processing step of extracting from the first holding step a portion of the byte data forming the predetermined data frames to serve as data for processing;  
20 a first determination processing step of sequentially reading from the first data extraction processing step the  
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byte data forming the data for processing and determining whether or not the read byte data forms a predetermined byte code;

5 a first calculation processing step of adding  
predetermined calculation values to or subtracting  
predetermined calculation values from either all of or a  
portion of a predetermined number of items of byte data that  
are continuous after byte data that is determined as a result  
of the determination in the first determination processing  
10 step to form the predetermined byte code;

a first data frame reconstruction processing step of  
reconstructing the predetermined data frames using byte data  
calculated in the first calculation processing step;

15 a first output step of converting the data frames  
reconstructed in the first data frame reconstruction  
processing step into binary data and serially outputting  
the binary data as transmission data or received data;

a second holding step of converting received data or  
transmission data in the form of serially input binary data  
20 into byte data and temporarily holding the converted byte  
data in respective predetermined data frames;

a second data extraction processing step of extracting  
from the second holding step a portion of the byte data forming  
the predetermined data frames to serve as data for  
25 processing;

a second determination processing step of sequentially reading from the second data extraction processing step the byte data forming the data for processing and determining whether or not the read byte data forms a predetermined byte code;

a second calculation processing step of adding the predetermined calculation values to or subtracting the predetermined calculation values from either all of or a portion of a predetermined number of items of byte data that are continuous after byte data that is determined as a result of the determination in the second determination processing step to form the predetermined byte code;

a second data frame reconstruction processing step of reconstructing the predetermined data frames using byte data subtracted or added in the second calculation processing step; and

a second output step of converting the data frames reconstructed in the second data frame reconstruction processing step into binary data and serially outputting the binary data as received data or transmission data.

33. The data protection processing method according to claim 32, wherein, in the first and second calculation processing steps, calculation values of predetermined data patterns or byte patterns are sequentially added to or

subtracted from digital data or byte data that is the object of the addition or subtraction.

34. The data protection processing method according to  
5 claim 32, further comprising an information altering step  
of altering at least one of information relating to the  
predetermined numerical values or the predetermined byte  
code, information relating to the predetermined number of  
items, and information relating to the predetermined  
10 calculation values.